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#12

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/308,140

DATE: 05/29/2001

TIME: 11:30:24

Input Set : A:\F7371c.app

Output Set: C:\CRF3\05292001\I308140.raw

ENTERED

3 <110> APPLICANT: BYASS, LOUISE J.
4 DOUCET, CHARLOTTE J.
6 <120> TITLE OF INVENTION: CARROT ANTIFREEZE POLYPEPTIDES
8 <130> FILE REFERENCE: F7371(C)
10 <140> CURRENT APPLICATION NUMBER: 09/308,140
11 <141> CURRENT FILING DATE: 1999-12-30
13 <150> PRIOR APPLICATION NUMBER: PCT/EP97/06181
14 <151> PRIOR FILING DATE: 1997-11-06
16 <150> PRIOR APPLICATION NUMBER: EP 96308362.1
17 <151> PRIOR FILING DATE: 1996-11-19
19 <160> NUMBER OF SEQ ID NOS: 12
21 <170> SOFTWARE: PatentIn Ver. 2.1
23 <210> SEQ ID NO: 1
24 <211> LENGTH: 7
25 <212> TYPE: PRT
26 <213> ORGANISM: Daucus carota
28 <400> SEQUENCE: 1
29 Leu Pro Asn Leu Phe Gly Lys
30 1 5
33 <210> SEQ ID NO: 2
34 <211> LENGTH: 9
35 <212> TYPE: PRT
36 <213> ORGANISM: Daucus carota
38 <400> SEQUENCE: 2
39 Ile Pro Glu Glu Ile Ser Ala Leu Lys
40 1 5
43 <210> SEQ ID NO: 3
44 <211> LENGTH: 10
45 <212> TYPE: PRT
46 <213> ORGANISM: Daucus carota
48 <220> FEATURE:
49 <221> NAME/KEY: MOD_RES
50 <222> LOCATION: (3) /
51 <223> OTHER INFORMATION: any, other or unknown amino acid
53 <400> SEQUENCE: 3
W--> 54 Leu Thr Xaa Leu Asp Leu Ser Phe Asn Lys
55 1 5 10
58 <210> SEQ ID NO: 4
59 <211> LENGTH: 22
60 <212> TYPE: PRT
61 <213> ORGANISM: Daucus carota
63 <220> FEATURE:
64 <221> NAME/KEY: MOD_RES
65 <222> LOCATION: (21) /
66 <223> OTHER INFORMATION: any, other or unknown amino acid
68 <400> SEQUENCE: 4
69 Ser Leu Arg Leu Ser Ser Thr Ser Leu Ser Gly Pro Val Pro Leu Phe

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70      1              5              10              15
W--> 72 Phe Pro Gln Leu Xaa Lys
73      20
76 <210> SEQ ID NO: 5
77 <211> LENGTH: 16
78 <212> TYPE: PRT
79 <213> ORGANISM: Daucus carota
81 <220> FEATURE:
82 <221> NAME/KEY: MOD_RES
83 <222> LOCATION: (1)..(16)
84 <223> OTHER INFORMATION: Xaa represents any, other or unknown amino acid
86 <400> SEQUENCE: 5
W--> 87 Xaa Xaa Glu Val Ile Pro Xaa Gln Leu Ser Thr Leu Pro Asn Leu Lys
88      1              5              10              15
91 <210> SEQ ID NO: 6
92 <211> LENGTH: 999
93 <212> TYPE: DNA
94 <213> ORGANISM: Daucus carota
96 <220> FEATURE:
97 <221> NAME/KEY: CDS
98 <222> LOCATION: (1)..(996)
100 <400> SEQUENCE: 6
101 atg aat att gaa tca tct ttc tgc cct att ttg tgc ata tgc atg att 48
102 Met Asn Ile Glu Ser Ser Phe Cys Pro Ile Leu Cys Ile Cys Met Ile
103      1              5              10              15
105 ttc ctc tgc ctt cca aac ctc tct gca tca caa aga tgc aac aac aac 96
106 Phe Leu Cys Leu Pro Asn Leu Ser Ala Ser Gln Arg Cys Asn Asn Asn
107      20              25              30
109 gac aag caa gct tta ctc caa atc aaa aca gcc ttg aaa aac ccc acc 144
110 Asp Lys Gln Ala Leu Leu Gln Ile Lys Thr Ala Leu Lys Asn Pro Thr
111      35              40              45
113 att aca gac tca tgg gtg tca gac gac gat tgt tgt ggt tgg gac cta 192
114 Ile Thr Asp Ser Trp Val Ser Asp Asp Asp Cys Cys Gly Trp Asp Leu
115      50              55              60
117 gtc gaa tgt gac gaa acc agc aac cgc ata att tcc ctc ata att caa 240
118 Val Glu Cys Asp Glu Thr Ser Asn Arg Ile Ile Ser Leu Ile Ile Gln
119      65              70              75              80
121 gac gac gaa gct ctc acc ggc caa atc cca cct cag gtg gga gac cta 288
122 Asp Asp Glu Ala Leu Thr Gly Gln Ile Pro Pro Gln Val Gly Asp Leu
123      85              90              95
125 cca tac ctc caa gcc tta tgg ttc cgt aaa ctc ccc aat ctt ttc gga 336
126 Pro Tyr Leu Gln Ala Leu Trp Phe Arg Lys Leu Pro Asn Leu Phe Gly
127      100              105              110
129 aaa atc cca gaa gaa att tct gca ctc aaa gac cta aaa tcc ctc aga 384
130 Lys Ile Pro Glu Glu Ile Ser Ala Leu Lys Asp Leu Lys Ser Leu Arg
131      115              120              125
133 ctc agc tcg acc agt ctc agt ggc cct gtc cct tta ttc ttc cct cag 432
134 Leu Ser Ser Thr Ser Leu Ser Gly Pro Val Pro Leu Phe Phe Pro Gln
135      130              135              140

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137 ctt acg aaa cta act tgt tta gac tta tcg ttt aac aaa ctt ttg ggt 480
138 Leu Thr Lys Leu Thr Cys Leu Asp Leu Ser Phe Asn Lys Leu Leu Gly
139 145 150 155 160
141 gta atc cct cct cag ctt tcc act ctt ccg aac ctt aaa gcc ctg cac 528
142 Val Ile Pro Pro Gln Leu Ser Thr Leu Pro Asn Leu Lys Ala Leu His
143 165 170 175
145 tta gaa cgt aac gaa ctc acc ggt gaa atc ccc gat atc ttt ggg aat 576
146 Leu Glu Arg Asn Glu Leu Thr Gly Glu Ile Pro Asp Ile Phe Gly Asn
147 180 185 190
149 ttt gct gga tcc ccg gac ata tat ctt tcg cat aac cag ctc acc ggg 624
150 Phe Ala Gly Ser Pro Asp Ile Tyr Leu Ser His Asn Gln Leu Thr Gly
151 195 200 205
153 ttt gtt ccc aaa act ttt gct aga gca gat cca att agg ctc gac ttc 672
154 Phe Val Pro Lys Thr Phe Ala Arg Ala Asp Pro Ile Arg Leu Asp Phe
155 210 215 220
157 tca ggg aac aga cta gaa ggt gat att tca ttc ttg ttt ggg cct aaa 720
158 Ser Gly Asn Arg Leu Glu Gly Asp Ile Ser Phe Leu Phe Gly Pro Lys
159 225 230 235 240
161 aaa cgc ttg gaa atg cta gat ttt tca gga aac gtg ctt agt ttc aat 768
162 Lys Arg Leu Glu Met Leu Asp Phe Ser Gly Asn Val Leu Ser Phe Asn
163 245 250 255
165 ttc tcc agg gtg cag gag ttt cca ccc tct ttg aca tac tta gac ttg 816
166 Phe Ser Arg Val Gln Glu Phe Pro Pro Ser Leu Thr Tyr Leu Asp Leu
167 260 265 270
169 aac cat aac cag atc agc gga agt ctg tcg agt gaa ttg gct aaa ttg 864
170 Asn His Asn Gln Ile Ser Gly Ser Leu Ser Ser Glu Leu Ala Lys Leu
171 275 280 285
173 gac ctg cag aca ttt aac gtc agt gat aat aat ctc tgc ggc aag att 912
174 Asp Leu Gln Thr Phe Asn Val Ser Asp Asn Asn Leu Cys Gly Lys Ile
175 290 295 300
177 cca aca ggg gga aac ctc cag aga ttc gac cgt acg gcc tat ctc cac 960
178 Pro Thr Gly Gly Asn Leu Gln Arg Phe Asp Arg Thr Ala Tyr Leu His
179 305 310 315 320
181 aac agt tgc ttg tgt ggt gct cca ttg cca gaa tgc tag 999
182 Asn Ser Cys Leu Cys Gly Ala Pro Leu Pro Glu Cys
183 325 330
186 <210> SEQ ID NO: 7
187 <211> LENGTH: 332
188 <212> TYPE: PRT
189 <213> ORGANISM: Daucus carota
191 <400> SEQUENCE: 7
192 Met Asn Ile Glu Ser Ser Phe Cys Pro Ile Leu Cys Ile Cys Met Ile
193 1 5 10 15
195 Phe Leu Cys Leu Pro Asn Leu Ser Ala Ser Gln Arg Cys Asn Asn Asn
196 20 25 30
198 Asp Lys Gln Ala Leu Leu Gln Ile Lys Thr Ala Leu Lys Asn Pro Thr
199 35 40 45
201 Ile Thr Asp Ser Trp Val Ser Asp Asp Asp Cys Cys Gly Trp Asp Leu
202 50 55 60

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204 Val Glu Cys Asp Glu Thr Ser Asn Arg Ile Ile Ser Leu Ile Ile Gln
205 65 70 75 80
207 Asp Asp Glu Ala Leu Thr Gly Gln Ile Pro Pro Gln Val Gly Asp Leu
208 85 90 95
210 Pro Tyr Leu Gln Ala Leu Trp Phe Arg Lys Leu Pro Asn Leu Phe Gly
211 100 105 110
213 Lys Ile Pro Glu Glu Ile Ser Ala Leu Lys Asp Leu Lys Ser Leu Arg
214 115 120 125
216 Leu Ser Ser Thr Ser Leu Ser Gly Pro Val Pro Leu Phe Phe Pro Gln
217 130 135 140
219 Leu Thr Lys Leu Thr Cys Leu Asp Leu Ser Phe Asn Lys Leu Leu Gly
220 145 150 155 160
222 Val Ile Pro Pro Gln Leu Ser Thr Leu Pro Asn Leu Lys Ala Leu His
223 165 170 175
225 Leu Glu Arg Asn Glu Leu Thr Gly Glu Ile Pro Asp Ile Phe Gly Asn
226 180 185 190
228 Phe Ala Gly Ser Pro Asp Ile Tyr Leu Ser His Asn Gln Leu Thr Gly
229 195 200 205
231 Phe Val Pro Lys Thr Phe Ala Arg Ala Asp Pro Ile Arg Leu Asp Phe
232 210 215 220
234 Ser Gly Asn Arg Leu Glu Gly Asp Ile Ser Phe Leu Phe Gly Pro Lys
235 225 230 235 240
237 Lys Arg Leu Glu Met Leu Asp Phe Ser Gly Asn Val Leu Ser Phe Asn
238 245 250 255
240 Phe Ser Arg Val Gln Glu Phe Pro Pro Ser Leu Thr Tyr Leu Asp Leu
241 260 265 270
243 Asn His Asn Gln Ile Ser Gly Ser Leu Ser Ser Glu Leu Ala Lys Leu
244 275 280 285
246 Asp Leu Gln Thr Phe Asn Val Ser Asp Asn Asn Leu Cys Gly Lys Ile
247 290 295 300
249 Pro Thr Gly Gly Asn Leu Gln Arg Phe Asp Arg Thr Ala Tyr Leu His
250 305 310 315 320
252 Asn Ser Cys Leu Cys Gly Ala Pro Leu Pro Glu Cys
253 325 330
256 <210> SEQ ID NO: 8
257 <211> LENGTH: 8
258 <212> TYPE: PRT
259 <213> ORGANISM: Daucus carota
261 <400> SEQUENCE: 8
262 Gly Pro Val Pro Leu Phe Phe Pro
263 1 5
266 <210> SEQ ID NO: 9
267 <211> LENGTH: 23
268 <212> TYPE: DNA
269 <213> ORGANISM: Daucus carota
271 <220> FEATURE:
272 <221> NAME/KEY: modified_base
273 <222> LOCATION: (1)..(23)
274 <223> OTHER INFORMATION: "n" represents inosine

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276 <400> SEQUENCE: 9
W--> 277 ggnccngtnc cnytnnttytt ycc 23
280 <210> SEQ ID NO: 10
281 <211> LENGTH: 32
282 <212> TYPE: DNA
283 <213> ORGANISM: Daucus carota
285 <400> SEQUENCE: 10
286 gagagaggat cctcgagttt tttttttttt tt 32
289 <210> SEQ ID NO: 11
290 <211> LENGTH: 829
291 <212> TYPE: DNA
292 <213> ORGANISM: Daucus carota
294 <220> FEATURE:
295 <221> NAME/KEY: CDS
296 <222> LOCATION: (1)..(591)
298 <400> SEQUENCE: 11
299 ggg ccg gtg ccg ctg ttc ttc cct cag ctt acg aaa cta act tgt tta 48
300 Gly Pro Val Pro Leu Phe Phe Pro Gln Leu Thr Lys Leu Thr Cys Leu
301 1 5 10 15
303 gac tta tcg ttt aac aaa ctt ttg ggt gta atc cct cct cag ctt tcc 96
304 Asp Leu Ser Phe Asn Lys Leu Leu Gly Val Ile Pro Pro Gln Leu Ser
305 20 25 30
307 act ctt ccg aac ctt aaa gcc ctg cac tta gaa cgt aac gaa ctc acc 144
308 Thr Leu Pro Asn Leu Lys Ala Leu His Leu Glu Arg Asn Glu Leu Thr
309 35 40 45
311 ggt gaa atc ccc gat atc ttt ggg aat ttt gct gga tcc ccg gac ata 192
312 Gly Glu Ile Pro Asp Ile Phe Gly Asn Phe Ala Gly Ser Pro Asp Ile
313 50 55 60
315 tat ctt tcg cat aac cag ctc acc ggg ttt gtt ccc aaa act ttt gct 240
316 Tyr Leu Ser His Asn Gln Leu Thr Gly Phe Val Pro Lys Thr Phe Ala
317 65 70 75 80
319 aga gca gat cca att agg ctc gac ttc tca ggg aac aga cta gaa ggt 288
320 Arg Ala Asp Pro Ile Arg Leu Asp Phe Ser Gly Asn Arg Leu Glu Gly
321 85 90 95
323 gat att tca ttc ttg ttt ggg cct aaa aaa cgc ttg gaa atg cta gat 336
324 Asp Ile Ser Phe Leu Phe Gly Pro Lys Lys Arg Leu Glu Met Leu Asp
325 100 105 110
327 ttt tca gga aac gtg ctt agt ttc aat ttc tcc agg gtg cag gag ttt 384
328 Phe Ser Gly Asn Val Leu Ser Phe Asn Phe Ser Arg Val Gln Glu Phe
329 115 120 125
331 cca ccc tct ttg aca tac tta gac ttg aac cat aac cag atc agc gga 432
332 Pro Pro Ser Leu Thr Tyr Leu Asp Leu Asn His Asn Gln Ile Ser Gly
333 130 135 140
335 agt ctg tcg agt gaa ttg gct aaa ttg gac ctg cag aca ttt aac gtc 480
336 Ser Leu Ser Ser Glu Leu Ala Lys Leu Asp Leu Gln Thr Phe Asn Val
337 145 150 155 160
339 agt gat aat aat ctc tgc ggc aag att cca aca ggg gga aac ctc cag 528
340 Ser Asp Asn Asn Leu Cys Gly Lys Ile Pro Thr Gly Gly Asn Leu Gln
341 165 170 175

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VERIFICATION SUMMARY

PATENT APPLICATION: US/09/308,140

DATE: 05/29/2001

TIME: 11:30:25

Input Set : A:\F7371c.app

Output Set: C:\CRF3\05292001\I308140.raw

L:54 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

L:72 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4

L:87 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5

L:277 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9